

ABSTRACT

An optical waveguide including: a dielectric core region extending along a waveguide axis; and a dielectric confinement region surrounding the core about the waveguide axis, the confinement region comprising a photonic crystal structure having a photonic band gap, wherein during operation the confinement region guides EM radiation in at least a first range of frequencies to propagate along the waveguide axis, wherein the core has an average refractive index smaller than about 1.3 for a frequency in the first range of frequencies, and wherein the core a diameter in a range between about 4λ and 80λ , wherein λ is a wavelength corresponding to a central frequency in the first frequency range.